

## **CLAIMS**

We claim:

- 5        1. A composition comprising a purified DNA having an oligonucleotide sequence selected from the group consisting of SEQ ID NO:44, and SEQ ID NO:49.
- 10      2. RNA transcribed from the DNA of Claim 1.
- 15      3. Protein translated from the RNA of Claim 2.
- 20      4. Antibodies produced from the protein of Claim 3.
- 25      5. A vector comprising the DNA of Claim 1.
- 30      6. A host cell comprising the vector of Claim 5.
7. The host cell of Claim 6, wherein said host cell is *E. coli*.
8. The host cell of Claim 6, wherein said host cell is *R. sphaeroides*.
9. The host cell of Claim 6, wherein said host cell is *A. thaliana*.
10. Transgenic plants comprising the vector of Claim 5.
11. A composition comprising a purified DNA encoding a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:45 and SEQ ID NO:50.
12. RNA transcribed from the DNA of Claim 11.
13. Protein translated from the RNA of Claim 12.

14. Antibodies produced from the protein of Claim 13.

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15. A vector comprising the DNA of Claim 11.

16. A host cell comprising the vector of Claim 5.

17. The host cell of Claim 16, wherein said host cell is *E. coli*.

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18. The host cell of Claim 16, wherein said host cell is *R. sphaeroides*.

19. The host cell of Claim 16, wherein said host cell is *A. thaliana*.

20. Transgenic plants comprising the vector of Claim 15.

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21. A purified nucleic acid that specifically hybridizes to the complement of a sequence selected from the group consisting of SEQ ID NO:44, and SEQ ID NO:49, under highly stringent conditions in 5X SSPE, 1% SDS, 5X Denhardt's reagent and 100 µg/ml denatured salmon sperm DNA at 68°C overnight, followed by washing in a solution comprising 20 0.1X SSPE and 0.1% SDS at 68°C, wherein said nucleic acid encodes a protein with DGTS synthetic activity.

22. A vector comprising the nucleic acid of Claim 21.

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23. A host cell comprising the vector of Claim 22.

24. A transgenic plant comprising the vector of Claim 22.

25. A protein encoded by the nucleic acid of Claim 21.

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26. A purified nucleic acid comprising a sequence that is at least 95% identical to SEQ ID NO:44, or a sequence that is at least 95% identical to SEQ ID NO:49, wherein said sequence encodes a protein with DGTS synthetic activity.
- 5           27. A vector comprising the nucleic acid of Claim 26.
28. A host cell comprising the vector of Claim 27.
29. A transgenic plant comprising the vector of Claim 27.
- 10          30. A protein encoded by the nucleic acid of Claim 26.